



Solving the Desktop Dilemma

With User-Centric Desktop Virtualization for the Enterprise

WHITE PAPER

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Introduction: The Desktop Dilemma

“Desktop computing” has become something of a misnomer. Today’s desktop is really an end-user environment defined by a profile consisting of applications, documents and configuration data. As end users rely more and more on mobile devices such as laptops, smart phones and removable storage drives, they need desktop environments that they can access anytime, anywhere.

On the other hand, IT organizations are under increasing pressure to reducing costs and increase productivity while strengthening security and tightening control over corporate information assets. Some organizations use thin clients to centralize their desktop infrastructure, but traditional thin client models cannot accommodate mobile laptop users and present unique challenges in terms of application compatibility and the overall end-user experience.

The dilemma, then, is how to accommodate user needs (freedom, familiarity, flexibility, mobility) and the needs of IT administrators (security, control, manageability, compliance) using a common framework.

This white paper explains how virtualization can help organizations solve the desktop dilemma, and outlines the ways in which VMware is harnessing 10 years of expertise and market leadership in desktop and server virtualization to deliver comprehensive solutions for unified access to universal clients, allowing organizations to strike a balance between IT and user needs while improving the bottom line.

Current Challenges in Enterprise Desktop and Application Management

According to Gartner Research, “issues related to operating system migrations, PC replacements, operational PC costs and PC security concerns have organizations questioning their client-computing strategies.”¹ Here are a few of the most challenging issues associated with traditional approaches to enterprise desktop computing:

- **Data security.** Traditional desktop management solutions do not provide adequate security for endpoint data, especially when it is stored or accessed remotely or on mobile devices such as laptops and USB drives, and many organizations are looking for a fundamentally better solution. As Michael Rose of IDC remarks, “For organizations focused on data security as a top priority, Centralized Virtual Desktops have created a tremendous amount of interest.”²
- **Compliance and policy enforcement.** As many organizations have discovered, mobile devices and employee-owned PCs also make it extremely difficult to enforce corporate policies, prevent data leakage or maintain the comprehensive audit trails necessary to demonstrate compliance with the ever-growing number of government and industry regulations around the world.
- **Operational costs.** As Forrester Research points out, “managing the day-to-day operations associated with supporting a PC environment is no easy assignment.” Provisioning, managing and supporting traditional desktops can be costly and difficult, especially in large, geographically distributed environments that include a mix of operating systems, devices and access points.
- **Backup and recovery.** Desktop applications, user data and documents are very difficult to back up because of the decentralized nature of traditional desktop computing, and backing up an entire office full of desktops is not practical for most organizations. And if a desktop goes down or a laptop is lost, it can take hours or days to get the end user back up and running.
- **Patch and update management.** With traditional desktop computing, the hardware, operating system, applications and users are all tied to a single device. Updates to any of these elements tend to cause conflicts. For example, hardware refreshes often cause driver conflicts with the operating system, and OS updates invariably give rise to application incompatibilities.

These and other significant challenges are driving organizations to move away from the traditional model of the monolithic desktop in search of a fundamentally better way to operate their end-user environments.

Solving the Desktop Dilemma with Virtualization

“...the traditional desktop model — inherently insecure, inflexible, and hard-to-manage — is a thing of the past. Organizations will instead identify their users by criteria like task-based, knowledge, or power users and will deliver dynamic desktops accordingly. After speaking to organizations looking at desktop and application virtualization, we know that client virtualization is not just an emerging trend, it’s the future of the corporate PC.”

— Forrester Research, “Demystifying Client Virtualization”, April 9, 2008

Many organizations are already overcoming the challenges associated with traditional desktop computing by adopting VMware virtualization technology to increase freedom and flexibility for end users while providing IT organizations with the centralized management and control they need to lower costs and increase security and control.

With the traditional “monolithic” desktop, the applications, operating system and user data are all tied to a specific piece of hardware. Virtualization breaks the bonds between these elements into isolated layers, enabling IT staff to change, update and deploy each component independently for greater business agility and improved response time. End users also benefit from virtualization because they get the same rich desktop experience, but with the added ability to access that computing environment from multitude of devices and access points in the office, at home or on the road.

Virtual desktops are also superior to terminal services because they eliminate the headaches associated with application sharing and application compatibility. Instead of having to share a limited subset of applications that are compatible with terminal services, each end user gets a complete, standardized and fully customizable desktop computing environment—a virtual machine. Each virtual desktop is completely isolated from other virtual machines, and IT administrators can provision and manage OS and application software just as they would with a traditional PC.

Enabling User-Centric Computing with VMware View

Although VMware is perhaps best known for its VMware Infrastructure datacenter virtualization platform, the company began 10 years ago as a pioneer in desktop virtualization with the award-winning VMware Workstation. VMware also revolutionized server-based client computing with VMware Virtual Desktop Infrastructure (VDI), which delivered fundamental improvements over the legacy terminal services paradigm by delivering fully isolated virtual desktops from the datacenter, each with its own operating system, applications and user configuration data.

Today, VMware has established itself as the global leader in both desktop and server virtualization, and is bringing together the best of its desktop and server virtualization technologies with VMware View™. As the next generation of the virtual desktop infrastructure, VMware View expands the VDI paradigm to include both server- and client-hosted virtual desktops that can run on any laptop or desktop computer, providing unified access to centralized resources, with or without a network connection, on the widest possible variety of endpoint devices.

Using VMware View, organizations can manage hardware, operating systems and applications independently of each other within a unified framework, resulting in a user-centric approach that fundamentally improves desktop management by reducing costs, strengthening security and tightening control over corporate assets while providing end users with a rich and flexible desktop experience.

“With...VMware View as a universal client solution, VMware is extending its thought leadership in desktop virtualization by adding client virtualization to provide centralized management to decentralized users,” said Mark Bowker, analyst at Enterprise Strategy Group. “VMware is showing its commitment to providing customers with a universal client that delivers the best end user experience while minimizing costs and simplifying management of desktops and applications.”

How Does VMware View Work?

Architecturally, VMware View brings together the following core technologies:

- **Virtual desktop infrastructure (VDI).** As with VMware VDI, VMware View provides a robust platform for hosting virtual desktops in the datacenter using the VMware ESX hypervisor, along with the highly scalable VMware vCenter Server solution for centralized management and rapid provisioning, and unique distributed infrastructure services for hardware-independent backup, failover and recovery of virtual desktops.
- **Advanced image management.** VMware View enables the creation of “linked clones” based off a “gold master image,” simplifying key administrative tasks such as patch and update management while retaining individual user data and settings. This approach allows IT organizations to reduce storage requirements by up to 90 percent while accelerating provisioning time from hours to just minutes.
- **Agentless application virtualization.** VMware View also makes it possible to run any version of virtually any application on a single operating system without conflicts by isolating applications and configuration data from the underlying OS. This technology dramatically improves application delivery by enabling IT staff to package applications once and deploy them to multiple device mediums across physical or virtual systems.

As illustrated in Figure 1, these technologies work together seamlessly as a single platform that enables IT staff to streamline desktop and application management through centralization, while end users get a single view of all their applications and data in a familiar, personalized environment – “myview” – that is available from any device and any location.

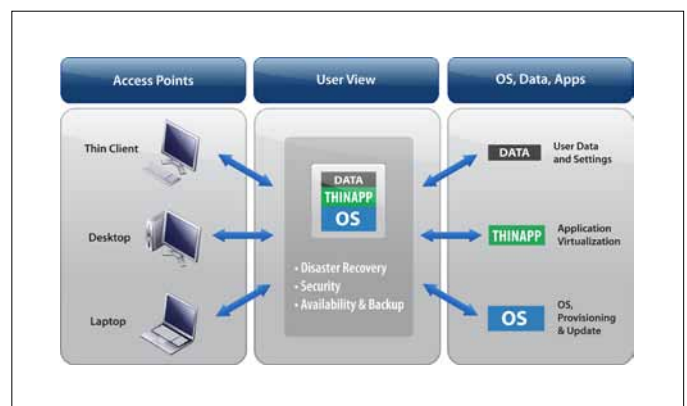


Figure 1: User-Centric Enterprise Desktop Computing with VMware View

“VMware virtual desktops have streamlined the deployment and management of desktops to our staff, and we’re confident that its robust desktop technology will keep our patient information safe. From doctors and nurses accessing medical records from any thin client workstation, to technicians who view X-rays, to professional staff accessing any of our 450+ applications, all of our users on VMware virtual desktops.”

— Chris House, Senior Network Analyst, MetroHealth

Key Benefits of VMware View

“Nurses and doctors don’t really care about the underlying technology. They just want it to work, and help them do their jobs better. The fact that our users have so readily adopted our VMware-powered workstation on wheels shows that this solution really works for them.”

— Laura Armistead, Unix Support Team Manager, Kindred Healthcare

VMware’s award-winning desktop virtualization solutions have already gained traction in the market, with many customers running thousands of VMware virtual desktops for users on thin clients, mobile workstations and other endpoints. Here are a few of the business benefits that customers have achieved by adopting VMware virtualization technology to solve their desktop dilemmas:

- **NEC Corporation** virtualized its server and desktop environments to centralize management, tighten security, improve disaster recovery and enhance remote access. The company is slated to have approximately 20,000 thin client terminals in use by the end of March 2009.
- **First American Corporation** has been able to optimize availability and reduce desktop power consumption by 93 percent by using VMware to replace traditional desktops with thin clients that use only nine watts of power each.
- **Kindred Healthcare** used VMware desktop virtualization to implement an innovative “workstation on wheels” infrastructure, enabling bedside access to patient data for caregivers while reducing the workstation-to-bed ratio and ensuring HIPAA compliance.
- **Brinsworth Comprehensive School** in England implemented VMware to replace traditional PCs with virtual machines that can be managed from the datacenter, providing students and staff with flexible endpoint access while reducing IT administration time by 20 percent and decreasing support calls by 15 percent.

- **United Equipment** adopted VMware server and desktop solutions to standardize their IT infrastructure, centralize management, tighten security, improve disaster recovery, and enhance remote access to their Microsoft Dynamics ERP application.
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“We felt that VMware’s virtual desktop performance, feature set, HA and manageability were best suited for our requirements. Also, VMware makes it possible to fully replicate existing PC environments in virtualized environments to improve recovery, backup and provisioning. And, VMware gives us the freedom to continue using company standard desktop applications exactly as they have always been used.”

— Susumu Shimano, Senior Manager, Management Information Systems Division, NEC

The Future of the Desktop: Unified Access to Universal Clients

VMware View is just the first step in a larger strategic vision of transforming desktop computing through its vClient initiative to expand virtual desktops to universal clients – computing environments that follow the user to any location and any device.

As part of the ongoing vClient initiative, VMware is working with equipment manufacturers across the industry to ensure seamless unified access to universal clients from desktops, laptops, thin clients and blade PCs. VMware is also developing strategic partnerships with companies such as Teradici Corporation to deliver a true PC experience with high-resolution graphics and rich multimedia, including streaming video, while giving customers the choice of using a broad range of protocol technologies.

In addition, VMware is bringing virtualization to mobile phones through the new VMware Mobile Virtualization Platform (MVP), yet another step towards the vision of providing organizations with the means to deliver unified access to universal clients in a way that is completely hardware-independent.

For more information on VMware View and the VMware vClient initiative, visit our Web site at www.vmware.com/go/view.

1 Source: Gartner, Inc. “Total Cost of Ownership Comparison of PCs With Hosted Virtual Desktops” by Mark A. Margevicius, Michael A. Silver and Federica Troni, August 4, 2008;

2 Source: Michael Rose, IDC, December 2008;

3 Forrester Research, Inc. “Demystifying Client Virtualization” by Natalie Lambert, April 9, 2008.

